

# PATENT ABSTRACTS OF JAPAN

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## (54) BONE-CONDUCTING HEADSET

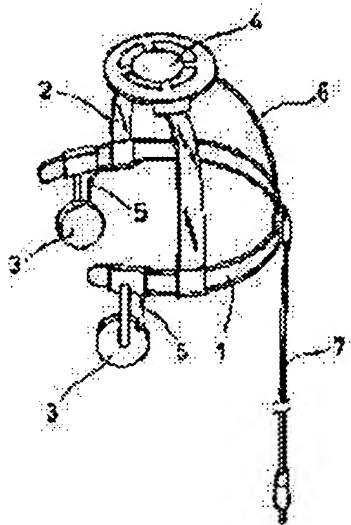
(57)Abstract:

**PROBLEM TO BE SOLVED:** To attain satisfactory transmission/reception without being affected of external noises, when reception as well as transmission under a high noise sound by providing a bone conduction loudspeaker placed around an ear, a bone-conducting microphone placed at an optional position of a head, an a support means that supports them.

**SOLUTION:** A bone-conducting loudspeaker 3 is fitted to both ends of a side band (support means) 1. The loudspeaker 3 is set so as to be pressed into contact around an ear, when a bone-conducting headset is mounted on a head. Thus, a sound outputted from the speaker 3 is delivered to a hearing organ as a bone conduction sound, without vibrating air and is heard without being intermingled with surrounding noise. On the other hand, a bone-conducting microphone 4 is fitted to a middle part of a head band 2 so as to be

pressed into contact with the top of the head. Thus, a voice by the user is picked up by the bone-conducting microphone 4 as a bone-conducting sound and not affected by a surrounding noise. Thus, bidirectional communication in a clear voice is attained, even in loud noise environment.

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## Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a bone conduction head set and the bone conduction head set which is the two-way conversation means which used for the detail more the bone conduction sound which equips a head and is used for the bottom of high noise, such as disaster sites, such as an intense road of a construction site and traffic, an airport, and a fire. [ especially ]

[0002]

[Description of the Prior Art] a bone conduction sound is used as a two-way conversation means used for the bottom of the above high noise -- disagreeable - microphone is known. drawing 4 is well-known -- disagreeable -- it is the sectional view showing the example of a configuration of - microphone. in there, the product made from plastics of 11 is usually disagreeable -- the insertion section 12 which is - piece and is inserted into external auditory meatus is projected in the curved-surface configuration which can be densely inserted into external auditory meatus. disagreeable -- a loudspeaker 15 is built in - piece body 13 with a microphone (pickup device) 14.

[0003] The microphone 14 consists of the sensor which senses an utterance person's own bone conduction sound signal (vibration) who gets across to the wall of external auditory meatus, and the vibration pickup component which changes into an electrical signal vibration which this sensor has sensed. it illustrated -- disagreeable -- the sound hole 16 which falls out from a loudspeaker 15 at the tip of the insertion section 12 is formed in the - piece 11, and disagreeable -- the duct 17 which is prolonged from the rear face of - piece body 13, and is open for free passage to a sound hole 16 is formed.

[0004]

[Problem(s) to be Solved by the Invention] the above-mentioned conventional two-way conversation -- a means -- disagreeable - microphone is very effective as a means to send out information to the bottom of the high noise. However, in receiving information conversely, in order to have to depend for IYAHONNU on a loudspeaker, it tends to serve as a situation which the external noise mixes in the bottom of the high noise, and is hard to hear. therefore, conventionally disagreeable because of mixing prevention of the external noise - muff etc. -- not using together -- it did not obtain but there was a fault, like as a result, equipment becomes large-scale.

[0005] This invention was not made that the fault of such a conventional technique should be wiped away, if it is possible, it closes transmission and reception good [ without receiving the effect of the external noise in the bottom of the high noise not only in transmission but in the case of reception ], and it makes it a technical problem for concomitant use with a helmet, a gas mask, etc. to also offer a possible bone conduction head set.

[0006]

[Means for Solving the Problem] the bone conduction head set characterized by this invention including a maintenance means to hold the bone conduction loudspeaker arranged so that it may contact around a lug, the bone-conduction microphone arranged so that the location of the arbitration of a head may be contacted, and said bone conduction loudspeaker and bone-conduction microphone in said location -- with, the above-mentioned technical problem was solved.

[0007] The hat body of the thing which consists of the side belt surrounded from a both-sides head as said maintenance means, covering over the regio occipitalis capitis and the head belt which is attached in said side belt and surround the parietal region or fireproof dress, a helmet, and others etc. can be considered.

[0008]

[Embodiment of the Invention] About the gestalt of operation of this invention, it is based and explains to an accompanying drawing. It is the perspective view in which drawing 1 shows the perspective view of 1 operation gestalt of this invention, and drawing 2 shows the wearing condition to the head of that, and one in drawing is metal or a side band made from plastics, and is taken as the curve configuration which contacts the regio occipitalis capitis from a both-sides head. 2 is rubber and a head strap made from \*\*\*\*, and it is made to be prolonged in the temporal-region contact section of another side through the parietal region from one temporal-region contact section of the side band 1.

[0009] The bone conduction loudspeaker 3 is attached in the both ends of the side band 1. the bone conduction loudspeaker 3 -- the time of head wearing of this bone conduction head set -- the circumference of a lug -- preferably, it sets up so that the less than 60mm temporal region may be contacted from an ear hole core. The sound which came out of the bone conduction loudspeaker 3 in this way is transmitted to an acoustic organ official as a bone conduction sound \*\* [ according to / vibration of air ], and it is heard, without ambient noise mixing.

[0010] On the other hand, as the parietal region is contacted, a bone-conduction microphone 4 is attached in the pars intermedia of a head strap 2. In this way, a user's utterance sound is taken up by the bone-conduction microphone 4 as a bone conduction sound, and is changed and transmitted to an electrical signal. Since ambient noise is not taken up in this case, either but only a user's utterance sound is transmitted, the other party can hear it clearly.

[0011] As for the cord of the bone conduction loudspeaker 3, and 6, 5 is [ the cord of a bone-conduction microphone 4 and 7 ] output cables. In the case of this operation gestalt, a helmet, a gas mask, diving equipment, a hat, etc. can be worn after this bone conduction head set wearing.

[0012] As other operation gestalten, drawing 3 shows the example which included the configuration of this invention in the hat body 8 of fireproof dress. In that case, as the bone conduction loudspeaker 3 contacts the parietal region, it fixes a bone-conduction microphone 4 to the inside of a hat body 8, respectively, so that the temporal region may be contacted. In this configuration, since it becomes a means for hat body 8 the very thing to hold the bone conduction loudspeaker 3 and a bone-conduction microphone 4 on a head, the configuration like the above-mentioned side band 1 and a head strap 2 becomes unnecessary.

[0013] The hat body of diving equipment, a gas mask, a helmet, and others receive the configuration of this invention outside the hat body 8 of the above-mentioned fireproof dress, and it can be installed in the inside of an object like the case of a hat body 8, and can be used for it.

[0014]

[Effect of the Invention] Since a receiving sound [ in / this invention is as having mentioned above, is easy in attach/detach, and / two-way conversation ] is transmitted to the bone of the perimeter of a lug where it contacts from a bone conduction loudspeaker

as a bone conduction sound It becomes possible to always hear clearly also in the condition that it was not concerned with the existence of ambient noise, and the earplug for sound isolation closed the ear hole (since the sound from a bone conduction loudspeaker emerges when the earplug for sound isolation closes, it much more becomes easy to hear it.). On the other hand, since it is taken up by the bone-conduction microphone as a bone conduction sound and is changed and transmitted to an electrical signal, dial tone is not influenced of this and ambient noise. Therefore, according to the bone conduction head set concerning this invention, even if it is under the high noise, there is effectiveness whose two-way conversation with clear voice becomes possible. [0015] According to invention of claim 3, there is effectiveness which can include the configuration concerning this invention in a hat body, a helmet, etc. of fireproof dress or diving equipment, and can be used with them.

#### CLAIMS

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##### [Claim(s)]

[Claim 1] The bone conduction head set characterized by including a maintenance means to hold the bone conduction loudspeaker arranged so that it may contact around a lug, the bone-conduction microphone arranged so that the location of the arbitration of a head may be contacted, and said bone conduction loudspeaker and bone-conduction microphone in said location.

[Claim 2] The bone conduction head set according to claim 1 which consists of the side belt which said maintenance means surround from a both-sides head, covering over the regio occipitalis capitis, and the head belt which is attached in said side belt and surround the parietal region.

[Claim 3] The bone conduction head set according to claim 1 said whose maintenance means is the hat body of fireproof dress, a helmet, and others.